

## ABSTRACT OF THE DISCLOSURE

2           A sampling transition-through-a-selected-voltage-detector sets two latches to different values  
when an input signal comparator referenced to the selected voltage transitions during a sample  
4 interval: at the beginning of the sample interval one latch receives one comparison value while at  
the end of the sample interval the other latch receives an opposite comparison value. A difference  
6 (XOR) in latched values for the transition detection latches indicates a transition through the selected  
voltage during the sample interval. A solution to the problem of such a transition-through-a-selected-  
8 voltage detection mechanism's insensitivity to steady state voltages may be solved by including an  
additional latch that is set by a second input signal comparator whose reference voltage is offset  
10 slightly from that used to detect transitions through the selected voltage, and that is also clocked at  
the start of the sample interval. Thus there are two latches clocked at the start of the sample interval.  
12 If they are different, as indicated by another XOR, then the input was between the reference voltage  
and its slightly offset counterpart, even if the input signal was not in transition, or was steady state,  
14 at the start of the sample interval. The OR of the two XORs is the desired sampled indication of the  
value of the input signal for the sample interval, and is latched into an output latch, either at the start  
16 of the sample interval (for a pipelined system where the output is one state behind the samples) or  
is latched after delay no greater than the length of the sample interval (for a non-pipelined system).